

### **REMARKS**

Reconsideration and allowance of the present application based on the following remarks are respectfully requested.

Upon entry of the above amendments, claims 21-27, 29-30, 33-36 and 38-53, will be pending. Claims 21 and 40 are independent. Both independent claims are directed to the embodiment wherein the composition is an ink (see, *e.g.*, page 1, line 24, page 14, line 9; canceled claim 37). Furthermore, the inks are characterized by a viscosity of less than 20 cp (mPa.s) at 20 °C, see, *e.g.*, page 13, lines 20-22.

Claim 21 is directed to the embodiment of the invention in which the ink includes a carbon black pigment carrying water-dispersing groups. This feature is described, for example, on page 11, line 27.

Claim 40 is directed to the embodiment of the invention in which the hydrophilic component (a) of the ink is a hydrophilic polyurethane polymer (see, *e.g.*, page 3, lines 19-20) without further qualification of the pigment (c).

Claims 41-53 find basis in the original disclosure and claims 21-39.

Accordingly, no new matter is added.

Reconsideration of the rejection of claims 25 and 30, under 35 USC 112, second paragraph, is respectfully requested.

Claim 25, for further clarity, recites a mixture of hydrophobic acrylic polymer and hydrophobic polyurethane polymer. This is not inconsistent with the language “a hydrophobic polymer.” The article “a” is construed as encompassing not only a single hydrophobic polymer having the stated molecular weight but also more than one such hydrophobic polymer. Mixtures of polymers for each of the hydrophilic polymer and the hydrophobic polymer are clearly contemplated by the disclosure on pages 2-10, and specifically mentioned on page 10, line 12. However, it is also understood that when a mixture of hydrophobic (or, for that matter, hydrophilic) polymers is present, it is only required that at least one such polymer have the stated molecular weight. The disclosure on page 10 at, *e.g.*, lines 12-14, does not specify a particular molecular weight for the additional polymer or polymers.

Again, it is only required that there is at least one hydrophilic polymer (a) having a number average molecular weight less than 30,000 and at least one hydrophobic polymer (b) having a number average molecular weight more than 40,000.

Amended claim 30 and corresponding new claim 48 no longer recite a preferred range within a broader range.

Accordingly, the rejection under the second paragraph of Section 112 should be withdrawn.

Reconsideration and withdrawal of the rejection of claims 21-24, 26, 31 and 34-39, as anticipated by Overbeek, *et al*, U.S. 5,962,571 ('571) is respectfully requested for at least the following reasons.

Claim 21 recites an ink composition having a viscosity at 20 °C which is less than 20 cp. This feature is not disclosed, inherently or explicitly, in the '571 patent.

Claim 40 also recites the viscosity of less than 20 cp at 20 °C.

Of course, the '571 patent does not disclose pigment carrying water-dispersible groups or hydrophilic polyurethane polymers.

Accordingly, none of claims 21-24, 26, or 34-36 or 38-39 and none of newly added claims 40-53, are anticipated by the '571 patent.

Reconsideration and withdrawal of the rejection of claims 21-24, 26, 30, 31-32, 34 and 37, as anticipated by Beck *et al*, U.S. 5,932,629 ('629) is respectfully requested for at least the same reasons that the Overbeek '571 patent is deficient. There is no disclosure of the low viscosity inks to which the present claims are directed. There is no disclosure of the carbon black pigment or the hydrophilic polyurethane polymers which characterize some of the pending claims.

Accordingly, none of claims 21-24, 26, 30, 34 or 37 or any of claims 40-53 are anticipated by the '629 patent.

Reconsideration and withdrawal of the rejection of claims 21-24, 26, 28, 30-32 and 35-39 as anticipated by Anton *et al*, U.S. 6,005,023 ('023), is respectfully requested for at least the following reasons.

This rejection should be withdrawn with respect to claim 21 and claims 22-24, 26, 30, 34 or 37, because there is no disclosure, inherently or explicitly, of pigment carrying water-dispersing groups.

The rejection does not apply to new claims 40-53 because there is no disclosure in the '023 patent of hydrophilic polyurethane polymers.

Accordingly, none of pending claims 21-24, 26, 28, or 30 are anticipated by the '023 patent.

In connection with the obligation under 37 C.F.R. 1.56, Applicants confirm that the claimed subject matter of each claim was commonly owned at the time each invention was made.

The rejection of claim 33 as unpatentably obvious over Beck '629 in view of Belmont *et al*, U.S. 5,851,280 ('280) is respectfully traversed for at least the following reasons.

Applicants respectfully submit that the practitioner of ordinary skill would not have been motivated to incorporate a modified carbon black as disclosed by Belmont '280 in the compositions of Beck '629 since the '629 compositions include both surfactants and dispersants. Therefore, there would be no incentive to add a special, and more expensive pigment, where no perceivable advantage would be gained.

Of course, even if some motivation could be found to make the modification of Beck's compositions, this would still not result in an ink having a viscosity of less than 20 cp.

Withdrawal of the rejection of claim 33 is, therefore, respectfully requested.

Reconsideration and withdrawal of the rejection of claim 25 as unpatentably obvious over Anton '023 in view of Yang, U.S. 5,594,044 ('044), is respectfully requested.

Applicants respectfully submit that the practitioner would not have been motivated by the disclosure of Yang to include a polyurethane polymer in the ink jet ink disclosed in Anton '023.

Anton '023 is concerned with ink jet inks in aqueous emulsions (an aqueous carrier medium) and which are particularly useful in printing on paper, fabric, film (*e.g.*, column 7, lines 36-38), and which have improved water and smear resistance (*e.g.*, column 1, lines 40-45).

Yang '044 is concerned with ink jet inks having improved alcohol rub resistance (*e.g.*, title, Abstract, column 1, lines 11-12) and for use on non-porous substrates, such as metal, glass and plastic containers (*e.g.*, column 1, lines 6-9). The inks of the '044 patent are based on organic solvents (see, *e.g.*, column 3, lines 26-62, and Example, column 8).

Accordingly, the practitioner having the disclosure of Yang '044 would not consider the disclosure of polyurethane polymers in organic solvent based inks for ink-jet printing of non-porous substrates to be relevant to the inks according to Anton '023 for aqueous based inks for printing porous substrates, such as paper and fabric.

Reconsideration and withdrawal of the rejection of claim 25 is, therefore, respectfully requested.

With regard to new claim 44, corresponding to claim 25, but dependent on claim 40, the combined disclosures of Anton '023 and Yang '044, would not suggest the combination of a hydrophilic polyurethane polymer and a mixture of hydrophobic acrylic polymer and hydrophobic polyurethane polymer.

Therefore, claim 44 is allowable over Anton '023 and Yang '044 for this additional reason.

Reconsideration and withdrawal of the rejection of claims 27 and 29, under 35 U.S.C. 103(a), over Anton '023 in view of Shioya, *et al*, U.S. 4,732,613 ('613), is respectfully requested for at least the following reasons.

Since Shioya, *et al*, '613 does not obviate the deficiencies of the disclosure of Anton '023, even if the ink compositions of Anton '023 were modified to include a total concentration of divalent and trivalent metal ions below 5000 ppm, the subject matters of claims 27 and 29, dependent on claim 21, or new claims 46 and 47, which include the limitations of independent claim 40, would not have been obvious.

Therefore, withdrawal of this ground for rejection is respectfully requested.

Finally, regarding the rejection of claim 33, as unpatentably obvious over Anton '023 in view of Osumi, *et al*, U.S. 5,976,233 ('233), reconsideration is respectfully requested for at least the following reasons.

It is respectfully submitted that the practitioner of ordinary skill in the art would not have been motivated by the '233 patent to modify Anton '023 to include the self-emulsifying carbon black disclosed in the '233 patent.

According to Osumi, *et al*, '233, it is possible to improve inks for ink-jet recording, by using a self-dispersing carbon black "without using any dispersing agent" by including a specific humectant (see, *e.g.*, column 1, lines 46-50; column 2, lines 18-29). All of the examples show inks without including polymeric dispersing agents.

Therefore, it is respectfully submitted that the practitioner would not have been motivated to include the self-dispersing carbon black in the ink compositions of Anton '023 which include a branched polymeric dispersant and an emulsion polymer additive.

Accordingly, the rejection of claim 33 or the new claim 51, dependent on claim 40, should be withdrawn.

Applicants concur that the references cited to show the state of the art would not be applicable to rejecting any of the pending claims.

In view of the foregoing, the claims are now believed to be in form for allowance, and such action is hereby solicited. If any point remains in issue which the Examiner feels may be best resolved through a personal or telephone interview, please contact the undersigned at the telephone number listed below.

All objections and rejections having been addressed, it is respectfully submitted that the present application is in a condition for allowance and a Notice to that effect is earnestly solicited.

Respectfully submitted,

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